AMENDMENTS TO THE CLAIMS

For the convenience of the examiner, all pending claims of the application are reproduced below regardless of whether amended or not. The claims have not been amended.

1. (Original) A diagnostic system for use in a process plant having a process control system that performs manufacturing related control functions with respect to the process plant and a safety system that performs safety related control functions with respect to the process plant, comprising:

a computer having a processor and a memory;

a process control system controller communicatively coupled to the computer and adapted to perform process control functionality using one or more process control field devices;

a safety system controller communicatively coupled to the computer and adapted to perform safety system functionality using one or more safety system field devices; and

a diagnostic application stored on the memory of the computer and adapted to be executed on the processor to enable one or more users to perform a diagnostic activity with respect both the process control system and the safety system, the diagnostic application including a communication routine adapted to communicate process control system messages to or from the process control system controller and to communicate safety system messages to or from the safety controller, wherein the process control system messages and the safety system messages use a common communication format including a field that distinguishes the process control system messages from the safety system messages.

2. (Original) The diagnostic system of claim 1, wherein the diagnostic application includes a plurality of diagnostic tools that can be implemented on either the process control system or the safety system.

3. (Original) The diagnostic system of claim 2, wherein the plurality of diagnostics tools includes a tuner for tuning control loops.

4. (Original) The diagnostic system of claim 1, wherein the diagnostic application is adapted to present a view of both process control system entities and safety system entities on a common display screen and to provide diagnostic data pertaining to at least one of the process control system entities and to at least one of the safety system entities.

5. (Original) The diagnostic system of 4, wherein the diagnostic application is adapted to present the view of both the process control system entities and the safety system entities as a hierarchical display and to enable a user to navigate the hierarchical display to view the diagnostic data pertaining to at the least one of the process control system entities and to the at least one of the safety system entities.

6. (Original) The diagnostic system of claim 5, wherein the hierarchical view includes a first level that corresponds to a first entity and a second level that includes process control system entities and safety system entities associated with the first entity.

7. (Original) The diagnostic system of claim 6, wherein the first entity is an area and the process control system entities and the safety system entities are one of a unit, a device and a module.

8. (Original) The diagnostic system of claim 6, wherein the first entity is a unit and the process control entities and the safety system entities include one of a device and a module.

9. (Original) The diagnostic system of claim 5, wherein the hierarchical view includes a multiplicity of levels, wherein each level corresponds to a different scope of entities within the process plant and each lower level contains entities associated with the next higher level, and wherein the diagnostic application is adapted to provide an integrity indication for a first one of the levels with the integrity indication developed from diagnostic data for at least one process control system entity and at least one safety system entity at a lower level than the first one of the levels.

10. (Original) The diagnostic system of claim 9, wherein the first one of the levels is an area of the process plant and the lower lever is one of a unit, a device and a module.

11. (Original) The diagnostic system of claim 9, wherein the first one of the levels is a unit of the process plant and the lower lever is one of a device and a module.

12. (Original) The diagnostic system of claim 4, wherein the diagnostic data is data obtained from the at least one of the process control system entities and the at least one of the safety system entities.

13. (Original) The diagnostic system of claim 12, wherein the view includes information about one or more field devices and wherein the diagnostic data includes device diagnostic data from the one or more field devices.

14. (Original) The diagnostic system of claim 4, wherein the diagnostic data is health data indicating a measure of health for the at least one of the process control system entities and the at least one of the safety system entities.

15. (Original) The diagnostic system of claim 4, wherein the diagnostic data includes status data for the at least one of the process control system entities and the at least one of the safety system entities.

16. (Original) The diagnostic system of claim 4, wherein the diagnostic data includes mode data for the at least one of the process control system entities and the at least one of the safety system entities, wherein the mode data indicates a mode associated with the operation of a process control logic entity or a safety system logic entity.

17. (Original) The diagnostic system of claim 4, wherein the view is a summary view including a summary of diagnostic data from both process control system entities and safety system entities.

18. (Original) The diagnostic system of claim 1, wherein the diagnostic application is an alarm display application that displays alarms from both the process control system and the safety system.

19. (Original) The diagnostic system of claim 18, wherein the alarm display application is adapted to receive process control system alarm messages including process control system alarms, to receive safety system alarm messages including safety system alarms and to present indications of the process control system alarms and the safety system alarms on a display in a manner that distinguishes the process control system alarms from the safety system alarms.

20. (Original) An alarm display system for use in a process plant having a process control system with a process control system controller that performs manufacturing related control functions using one or more process control field devices, a safety system with a safety system controller that performs safety related control functions using one or more safety system field devices, and a computer having a display and a processor communicatively coupled to the process control system controller and to the safety system controller, the alarm display system comprising:

a memory; and

an alarm application stored on the memory and adapted to be executed on the processor including;

a first routine that communicates process control system messages to or from the process control system controller and that communicates safety system messages to or from the safety system controller, wherein the first routine is adapted to receive process control system messages including process control system alarms and to receive safety system messages including safety system alarms; and

a second routine that displays the process control system alarms and the safety system alarms to one or more users on the display in a manner that distinguishes the process control system alarms from the safety system alarms.

21. (Original) The alarm display system of claim 20, wherein the alarm display application includes a third routine that determines a priority associated with each of the process control system alarms and the safety system alarms.

22. (Original) The alarm display system of claim 21, wherein the alarm display application includes a sorting routine that sorts both the process control system alarms and the safety system alarms by the priorities associated with the process control system alarms and the safety system alarms.

23. (Original) The alarm display system of claim 20, wherein the alarm display application includes a sorting routine that sorts both the process control system alarms and the safety system alarms according to whether an alarm is a process control system alarm or a safety system alarm.

24. (Original) The alarm display system of claim 20, wherein the alarm display application includes an alarm response routine adapted to enable both the process control system alarms and the safety system alarms to be acknowledged via the display.

25. (Original) The alarm display system of claim 20, wherein the alarm display application includes an alarm response routine adapted to enable both process control system alarms and safety system alarms to be turned off via the display.

26. (Original) The alarm display system of claim 20, wherein the alarm display application is adapted to be accessed via one or more user accounts, wherein each user account includes access privileges for a separate user entity.

27. (Original) The alarm display system of claim 26, wherein each of the one or more user accounts includes access privileges that enable a user entity to view only the process control system alarms or only the safety system alarms, or both the process control system alarms and the safety system alarms.

28. (Original) The alarm display system of claim 26, wherein each of the one or more user accounts includes access privileges that enable a user entity to acknowledge only process control system alarms or only safety system alarms or both process control system alarms and safety system alarms.

29. (Original) The alarm display system of claim 26, wherein each of the one or more user accounts includes access privileges that enable a user entity to turn off only process control system alarms or only safety system alarms or both process control system alarms and safety system alarms.

30. (Original) The alarm display system of claim 26, wherein the alarm display application is adapted to enable preferences to be set for each of the one or more user accounts indicating the manner in which the second routine will display the process control system alarms and the safety system alarms.

31. (Original) The alarm display system of claim 26, wherein the first routine communicates the process control system messages and the safety system messages using a common communication format.

32. (Original) The alarm display system of claim 31, wherein the common communication format includes a field that distinguishes the process control system messages from the safety system messages.

33. (Original) The alarm display system of claim 20, wherein the first routine is adapted to receive safety system messages including a device alarm from a device within the safety system and wherein the second routine is adapted to display the device alarm from the device within the safety system with the process control system alarms and the safety system alarms.

34. (Original) The alarm display system of claim 20, wherein the first routine is adapted to receive a first timestamp along with one of the process control system alarms indicating when the one of the process control system alarms was created in the process control system and to receive a second timestamp along with one of the safety system alarms indicating when the one of the safety system alarms was created in the safety system, and wherein the second routine is adapted to display an indication of the first timestamp along with the one of the process control system alarms and an indication of the second timestamp along with the one of the safety system alarms.

35. (Original) The alarm display system of claim 20, further including a third routine that stores the process control system alarms and the safety system alarms in a database and that stores a timestamp for each of the process control system alarms and the safety system alarms to create a time chronicle of events having interspersed process control system alarms and safety system alarms.

36. (Original) A method of handling alarms in a process plant having a process control system with a process control system controller that performs manufacturing related control functions using one or more process control field devices and a safety system with a safety system controller that performs safety related control functions using one or more safety system field devices, the method comprising:

receiving process control system messages at a first location from the process control system controller, wherein one or more of the control system messages includes a control system alarm;

receiving safety system messages at the first location from the safety system controller, wherein one or more of the safety system messages includes a safety system alarm; and

using a single user-interface application at the first location to display the process control system alarms and the safety system alarms to one or more users in a manner that distinguishes the process control system alarms from the safety system alarms.

37. (Original) The method of claim 36, wherein using a single user-interface application includes determining a priority associated with each of the process control system alarms and the safety system alarms.

38. (Original) The method of claim 37, wherein using a single user-interface application includes sorting both the process control system alarms and the safety system alarms by the priorities associated with the process control system alarms and the safety system alarms.

39. (Original) The method of claim 36, wherein using a single user-interface application includes sorting both the process control system alarms and the safety system alarms according to whether an alarm is a process control system alarm or a safety system alarm.

40. (Original) The method of claim 36, wherein using a single user-interface application includes enabling both process control system alarms and safety system alarms to be acknowledged via the single user-interface application.

41. (Original) The method of claim 36, wherein using a single user-interface application includes enabling both process control system alarms and safety system alarms to be turned off via the single user-interface application.

42. (Original) The method of claim 36, wherein using a single user-interface application includes enabling the single user-interface application to be accessed via one or more user accounts, wherein each user account includes access privileges for a separate user entity.

43. (Original) The method of claim 42, wherein using a single user-interface application includes providing the one or more user accounts with access privileges that enable a user entity to view only the process control system alarms or only the safety system alarms, or both the process control system alarms and the safety system alarms.

44. (Original) The method of claim 42, wherein using a single user-interface application includes providing the one or more user accounts with access privileges that enable a user entity to acknowledge only process control system alarms or only safety system alarms or both process control system alarms and safety system alarms.

45. (Original) The method of claim 42, wherein using a single user-interface application includes providing the one or more user accounts with access privileges that enable a user entity to turn off only process control system alarms or only safety system alarms or both process control system alarms and safety system alarms.

46. (Original) The method of claim 42, wherein using a single user-interface application includes enabling preferences to be set for each of the one or more user accounts indicating a manner in which the process control system alarms and the safety system alarms will be displayed to a user entity.

47. (Original) The method of claim 36, wherein receiving the process control system messages includes receiving the process control system messages in a first message format and wherein receiving the safety system messages includes receiving the safety system messages in the first message format.

48. (Original) The method of claim 47, wherein the first message format includes a field that distinguishes the process control system messages from the safety system messages.

49. (Original) The method of claim 36, wherein receiving the process control system messages includes receiving the process control system messages via a first communication link and wherein receiving the safety system messages includes receiving the safety system messages via the first communication link.

50. (Original) The method of claim 36, wherein receiving the safety system messages includes receiving a device alarm from a device within the safety system and wherein using a single user-interface application includes displaying the device alarm from the device within the safety system with the process control system alarms and the safety system alarms.

51. (Original) The method of claim 36, wherein receiving the process control system messages includes receiving a first timestamp along with the process control system alarm indicating when the process control system alarm was created in the process control system, wherein receiving the safety system messages includes receiving a second timestamp along with the safety system alarm indicating when the safety system alarm was created in the safety system, and wherein using a single user-interface application includes displaying an indication of the first timestamp along with the process control system alarm and an indication of the second timestamp along with the safety system alarm.

52. (Original) The method of claim 36, further including receiving multiple process control system alarms and multiple safety system alarms, storing each process control system alarm and each safety system alarm in a common database and storing a timestamp for each of the process control system alarms and each of the safety system alarms to create a time chronicle of events having interspersed process control system alarms and safety system alarms.